

# MARCONIPHONE 223 UNIVERSAL SUPERHET "THREE"

**Circuit.**—The first detector-oscillator, X30 (V1), is preceded by a single tuned aerial circuit which incorporates a special "damping" circuit L1, TC6, R6, to provide local-distance variation.

Oscillator tuning is in the grid circuit and bias is by cathode resistance and A.V.C. Coupling to the next valve is by band pass I.F. transformer (frequency 456 k.c.). (See special note on trimmers.)

The second valve is a double-diode-H.F. pentode, WD30 met. The I.F. is fed to the grid which is biased by A.V.C. only. The pentode section is followed by a second band-pass I.F. transformer, which is connected to the one diode anode that is used. The other diode anode is connected to cathode.

The L.F. signal is returned through the A.V.C. line, the H.F. stopper R11 and the secondary of I.F.T.1, to the grid of the pentode section of V2. There it is

amplified and coupled to the next valve by R9 and C13, C12 acting as I.F. by-pass condenser with R9 as I.F. decoupler.

The output valve, an N30 Cat. (V3), is a pentode, of which the grid leak forms the volume control. In the output circuit a muting switch is connected across the secondary of the transformer to short-circuit the speaker when the wavelength is being changed.

Mains equipment consists of an H.F. filter in the mains leads, a voltage adjustment resistance, a double rectifier used in a half-

wave circuit with smoothing effected by a choke in the positive H.T. lead used in conjunction with electrolytic condensers. The field coil is connected across the H.T.

**Special Notes.**—The H.F. filter and voltage adjustment resistance are mounted on the aluminium plate near the top of the cabinet.

The I.F. trimmers are the new type, in which a central screw tunes the primary

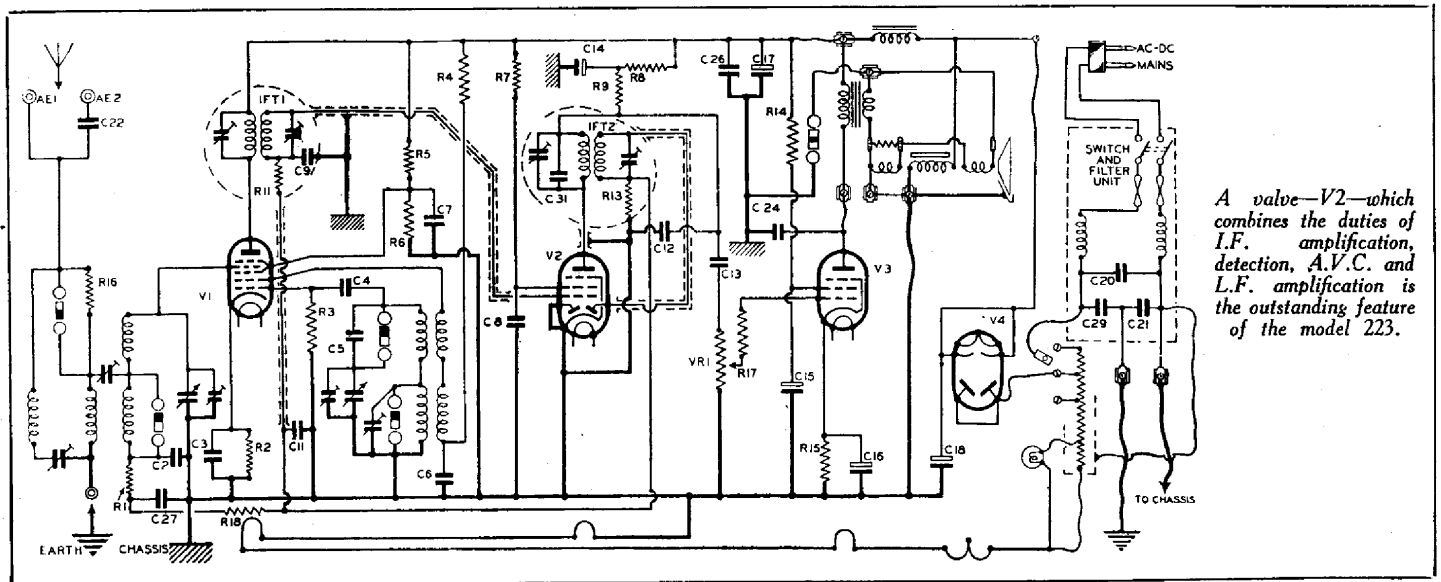
VALVE READINGS				
Valve	Type.	Electrode.	Volts.	M.a.
1	X30 met. (7)	anode ..	200	.5 to 1.3*
		screen ..	56	2.3
		osc. anode ..	70	
2	W.D. 30 met. (7)	anode ..	65	3
		aux. grid ..	50	1.8
3	N.30 cat (7)	anode ..	180	24
		aux. grid ..	145	4.6

\*Varies with position of L.D. switch.

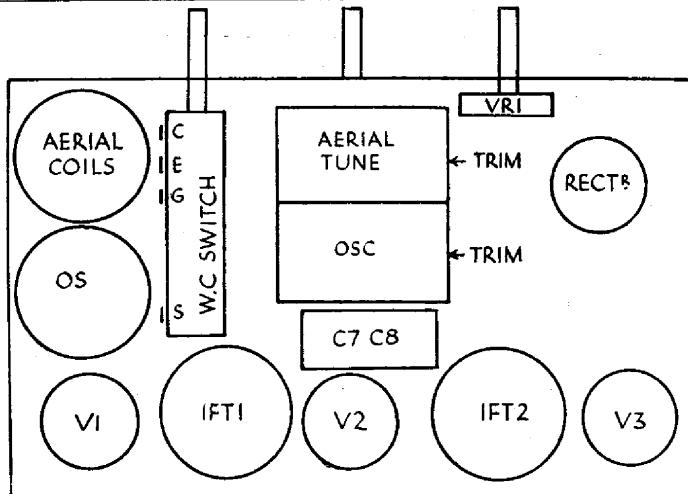
RESISTANCES		
R.	Purpose.	Ohms.
1	Decoupling V1 grid ..	100,000 (½)
2	V1 cathode bias ..	230 (½)
3	V1 osc. grid-leak ..	50,000 (½)
4	V1 osc. anode decoupling ..	100,000 (½)
5	Top part of V1 screen ptr. ..	35,000 (1)
6	Lower part of V1 screen ptr. ..	50,000 (½)
7	Voltage dropping to V2 aux. grid. ..	75,000 (½)
8	V2 anode decoupling ..	5,000 (½)
9	V2 anode L.F. coupling ..	35,000 (1)
11	H.F. stopper in return L.F. lead to V2. ..	100,000 (½)
13	Diode load ..	.5 Meg. (½)
14	Voltage dropping to V3 aux. grid. ..	10,000 (½)
15	V3 cathode bias ..	230 (½)
16	In selectivity aerial circuit ..	100,000 (½)
17	V3 grid stabiliser ..	50,000 (½)
18	Decoupling A.V.C. to V1 L.S. field ..	350,000 (½)
	Smoothing choke ..	5,000
		475

CONDENSERS		
C.	Purpose.	Mfd.
2	V1 grid decoupling ..	.1
3	V1 cathode by-pass ..	.1
4	V1 osc. grid reservoir ..	.0001
5	L.W. osc. tracking ..	.0005
6	V1 osc. anode decoupling ..	.1
7	V1 screen by-pass ..	.5
8	V2 aux. grid by-pass ..	.5
9	L.F. return from V2 grid ..	.0005
11	Decoupling A.V.C. to V2 ..	.002
12	I.F. by-pass from R9 ..	.0005
13	L.F. coupling V2 to V3 ..	.1
14*	L.F. decoupling V2 anode ..	el
15*	V3 aux. grid by-pass ..	el
16	V3 cathode by-pass ..	el
17*	H.T. smoothing ..	el
18*	H.T. smoothing ..	el
20	H.F. by-pass across mains ..	.01
21	H.F. mains filter ..	.005
22	Series aerial ..	.0005
24	V3 anode, tone compensating ..	.002
26	Across C17 ..	.1
27	A.V.C. to V1 grid decoupling ..	.01
29	H.F. mains filter ..	.005

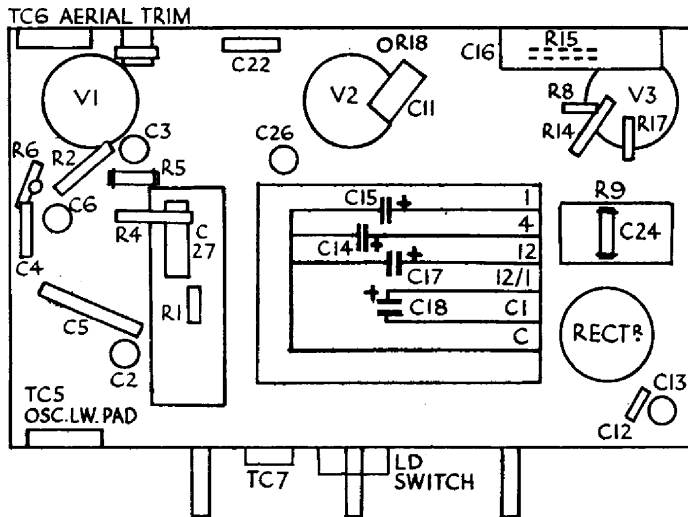
\* In condenser block (Part No. 19851A).



A valve—V2—which combines the duties of I.F. amplification, detection, A.V.C. and L.F. amplification is the outstanding feature of the model 223.



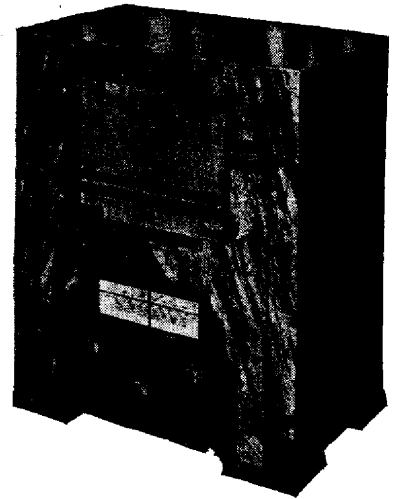
The intermediate frequency transformers used in the 223 have new type trimmers. Details are given under "Special Notes."



Below deck the receiver is particularly tidy. The condenser block leads are marked as shown.

**MARCONIPHONE 223 (Cont.)**  
 (turning clockwise to reduce capacity), and the nut surrounding it tunes the secondary,

turning anti-clockwise to reduce capacity.  
 The pilot lamp is a 5.2 v. .3 amp type.  
 Undo the vertical screw to remove it.



The Marconiphone mode 223 employs only four valves including the rectifier.

**Removing Chassis.**—Remove the wooden blocks covering the holding screws underneath the cabinet. Remove the set screws (grub screw), and release the cleat holding the cable to the right-hand side of the cabinet. Release the local-distance switch by unscrewing the circular escutcheon.

To remove the resistance panel, undo the four wood screws from the ends.

**General Notes.**—In working with this set remember that both on A.C. and D.C. mains the chassis may be live to earth.

- The wiring colour code is:—  
 H.T. +, red.  
 Anodes of valves when not direct to H.T. +, red-yellow.  
 Screens of valves when not direct to H.T. +, red-black.  
 Grids, green.  
 Mains, orange.  
 Heaters and cathodes, brown.  
 Other leads, yellow.

If hum is experienced on A.C. mains, reverse the plug in the socket.

**Replacing Chassis.**—Lay the chassis inside the cabinet, replace the L.D. switch escutcheon, and the knobs (re-waxing the grub screws).

Replace the holding screws, with the wooden blocks over them, and cleat the cable.